

Title: Health Craze

**Brief Overview:**

The students will gather, organize, and interpret data in order to determine which snack foods are healthy choices. Students will create line plots to display their data and utilize data analysis vocabulary to describe and interpret their data.

**NCTM Content Standard/National Science Education Standard:**

Data Analysis  
Comparing and Ordering Numbers

**Grade/Level:**

Grade 4

**Duration/Length:**

2 Days (60 minutes per day)

**Student Outcomes:**

Students will:

- Determine the appropriate scale to organize data
- Create line plots to organize data
- Interpret data from a line plot

**Materials and Resources:**

- Favorite School Snacks transparency (Teacher Resource 1)
- Snack Packs
- Sticky notes
- Data Analysis Vocabulary (Teacher Resource10)
- Cereal Data Cards (Student Resources1A-E)
- Data Analyst Cards (Student Resource 1F)
- Snack Data (Teacher Resource 2)
- Large number
- Chart paper
- Markers
- Cereal Data (Teacher Resource 3)
- Sugar Content of Popular Kids' Cereals (Student Resource2)
- SR2 Answer Key (Teacher Resource 4)
- Line Plot Exit Card (Student Resource 3)
- SR3 Answer Key (Teacher Resource 5)

- Think Twice Reteach Activity (Student Resources 4A-B)
- SR4A-B Answer Key (Teacher Resource 6)
- Scissors
- Glue
- Attention Consumers Extension Activity (Student Resources 5A-C)
- SR5 Answer Key (Teacher Resource 7)
- Drawing paper
- Nutrition Resources (books, magazines, internet, etc.)
- Data Analysis Vocabulary (Student Resource 6)
- Timer
- Now Hiring Activity (Student Resources 7A-B)
- Stopwatches
- Nifty Nibbles ingredients: raisins, pretzels, dried cranberries, crackers, cereal, seal-able plastic sandwich bags
- We're On a Roll Activity (Student Resources 8A-C)
- Nifty Nibbles Team Data transparency (Teacher Resource 8A)
- We're On a Roll Answer Key (Teacher Resource 8B)
- Around the Bend Activity (Student Resources 9A-B)
- Around the Bend Answer Key (Teacher Resource 9)
- Your Turn Activity (Student Resource 10)
- Summative Assessment Line Plots (Student Resources 11A-B)
- Summative Assessment Line Plots Answer Key (Teacher Resources 11A-B)

## **Development/Procedures:**

### Lesson 1

#### Pre-Assessment –

- Discuss the concept of snack foods with the students. Explore the types of snacks the students eat using the Favorite School Snacks overhead (Teacher Resource 1).
- Discuss how the students select their snacks using the Favorite School Snacks overhead (Teacher Resource 1).
- Tell the students that many manufacturers are looking closely at the fat content in their snacks due to concern about the number of overweight Americans. Discuss how much fat the students think are in the snacks they enjoy using Favorite School Snacks overhead (Teacher Resource 1).
- Ask the students to now think about the types of snacks offered in the school cafeteria. Ask the students if they think the school selects healthy snacks.
- Tell the students that they will be examining the fat content in several of the snacks available in the school cafeteria. They will be reporting their findings to the cafeteria manager. This may lead to a change in the types of snacks offered.

#### Launch-

- Assign pairs of students a snack and have them determine the fat content of their assigned snack.
- Students will record the fat grams on a sticky note.
- Students place their sticky notes on the chalkboard.

#### Teacher Facilitation –

- Tell the students that they have successfully collected their data.
- Ask the students what they notice about the data.
- Ask the students if there might be a better way to display the data so that it is easier to read and understand.
- Discuss with the class the use of line plots to display the data.
- Review the components of a line plot.
- Students construct the line plot using the provided data by moving the sticky notes on the board (Teacher Resource 2).
- After the line plot is completed, revisit what the students noticed about the data.
- Review the terms relating to a line plot and record on chart paper (Teacher Resource 10).

#### Student Application –

- Explain that the students will be creating a physical line plot where they represent the X symbols. They will then analyze the data to determine which cereals are healthiest.
- Distribute one Cereal Card (Student Resources 1A-E) to each student.
- Distribute the “Data Analyst” cards (Student Resource 1F). Those four students will be responsible for analyzing and discussing the line plot created.
- Place a number line on the floor.
- Ask students to determine the sugar content of their cereal.
- Students move around the room to create the line plot (Teacher Resource 3).
- Ask the Data Analysts to share what they notice about the data.
- Students will analyze the data to find the typical amount of sugar in these cereals.
- Record their responses on chart paper.
- Students will then determine which 4 cereals are the healthiest for kids. Students must provide support for their responses. Students will record their responses on the Sugar Content of Popular Kids’ Cereals handout (Student Resource 2) (Teacher Resource 4).

#### Embedded Assessment –

- Distribute and discuss Exit Card (Student Resource 3) (Teacher Resource 5).
- Students will need to create a line plot using the provided data.
- Students will need to use words and numbers to explain which cereal is the most healthy and why.

#### Reteaching/Extension –

- For those who have not completely understood the lesson, distribute, complete and discuss Think Twice handout (Student Resources 4A-B) (Teacher Resource

- 6). Students will follow direction as given on the handout. Lead a discussion about the data, including determining the range and mode of the data.
- For those who have understood the lesson, distribute and discuss Attention Consumers handout (Student Resources 5A-C) (Teacher Resource 7). Students will follow direction as given on the handout.

## Lesson 2

### Pre-Assessment –

- Divide students into groups of three or four.
- Explain that each group will receive a blank sheet of paper (Student Resource 6). On the paper, each student must record a vocabulary word associated with data analysis. Once the student has recorded his/her word, he/she should pass the paper to the right. The paper continues to travel around the table with each group member adding only one vocabulary term at a time until the group determines they can no longer add any words or if 5 minutes has elapsed. This entire activity must be done without talking.
- Share one word from each group. Groups must define the term they select. Groups may also provide examples. Students from other groups may add on to the definition or examples provided by the group that is sharing, however, they may not choose a word that has already been discussed on their turn. Continue until all groups have exhausted their lists.
- Add any new terms to class vocabulary chart.

### Launch –

- Distribute, read and discuss Now Hiring! Activity (Student Resources 7A-B).

### Teacher Facilitation –

- Using data collected from the Student Resources 7A-B activity, create a class line plot.
- Discuss the data (range, mode, gaps, outliers, etc.).
- Ask students how the managers at Nifty Snacks Inc. could determine which employees to hire if they could only hire half the class.
- Introduce and discuss the term median (Teacher Resource 10).

### Student Application –

- Discuss with the students how they could decrease the amount of time needed to make a bag of Nifty Nibbles.
- Discuss how many manufacturers utilize assembly lines to decrease the time needed to create a product.
- Distribute and discuss “We’re on a Roll” activity (Student Resources 8A-C).
- Students complete Part A of the activity.
- Collect the data from all groups using teacher transparency (Teacher Resource 8A).

- Students will use the data from all the groups to complete Part B of Student Resources 8A-C.
- Discuss class findings.

Embedded Assessment –

- Students will complete Part C of Student Resources 8A-C (Teacher Resource 8B).

Re-teaching/Extension –

- For those who have not completely understood the lesson, distribute, complete and discuss Around the Bend activity (Student Resources 9A-B) (Teacher Resource 9).
- For those who have understood the lesson, distribute, complete and discuss Your Turn activity (Student Resource 10).

**Summative Assessment:**

The students will complete the Summative Assessment Line Plots activity (Student Resources 11A-B). They will apply their knowledge of data analysis to analyze and interpret line plots. They will use this information to answer questions related to data analysis concepts (range, median, mode, etc.). The students will also write a paragraph to explain their understanding of how altering the data affects these concepts (Teacher Resources 10A-B).

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## Cereal Data Cards to Create a Human Line Plot

Cut out each cereal nutrition card and distribute to students.

You may refer to the following websites to gain more information: **Kellogg's** Cereal Products from [www.kellogg's.com](http://www.kellogg's.com): Smacks, Rice Krispies, Frosted Mini Wheats, Froot Loops, Frosted Flakes, Corn Pops, Cocoa Krispies, Apple Jacks. **General Mills** Cereal Products from [www.generalmills.com](http://www.generalmills.com): Trix, Reeses Puffs, Kix, Lucky Charms, Golden Grahams, Honey Nut Cheerios, Cheerios, Wheaties, Cocoa Puffs, Cinnamon Toast Crunch, Corn Chex. **Quaker** Cereal Product from [www.en.wikipedia.org/](http://www.en.wikipedia.org/): Cap'n Crunch. All sugar content information from USDA. July 28, 2006

**Apple Jacks®**

Sugar: **15 grams**

**Cap'n Crunch®**

Sugar: **12 grams**

**Cheerios®**

Sugar: **2 grams**

**Chex®**

Sugar: **3 grams**

**Cinnamon Toast Crunch®**

Sugar: **10 grams**

**Cocoa Krispies®**

Sugar: **11 grams**

**Cocoa Puffs®**

Sugar: **14 grams**

**Corn Pops®**

Sugar: **15 grams**

**Froot Loops®**

Sugar: **12 grams**

**Frosted Flakes®**

Sugar: **12 grams**

**Frosted Mini Wheats®**

Sugar: **11 grams**

**Frosted Wheaties®**

Sugar: **12 grams**

<p><b>Golden Grahams®</b></p> <p>Sugar: <b>11 grams</b></p>	<p><b>Honey Nut Cheerios®</b></p> <p>Sugar: <b>14 grams</b></p>
<p><b>Kix®</b></p> <p>Sugar: <b>3 grams</b></p>	<p><b>Lucky Charms®</b></p> <p>Sugar: <b>13 grams</b></p>

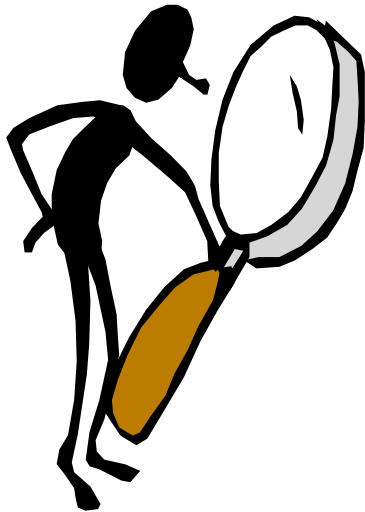
<p><b>Reeses Puffs®</b></p> <p>Sugar: <b>12 grams</b></p>	<p><b>Rice Krispies®</b></p> <p>Sugar: <b>3 grams</b></p>
<p><b>Smacks®</b></p> <p>Sugar: <b>15 grams</b></p>	<p><b>Trix®</b></p> <p>Sugar: <b>13 grams</b></p>

## Data Analysts Cards

Choose 4 students to be data analysts and distribute name tags. (2 extra are included)

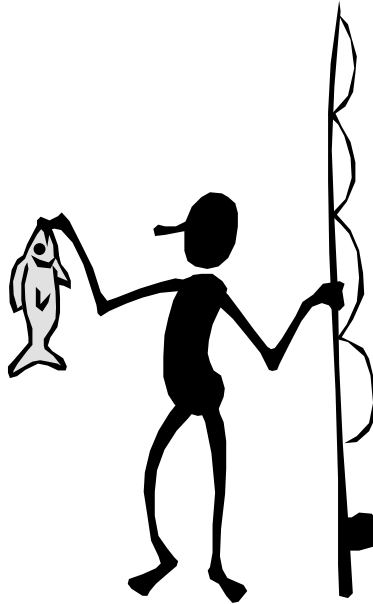
Data Analyst 1

Model Moe



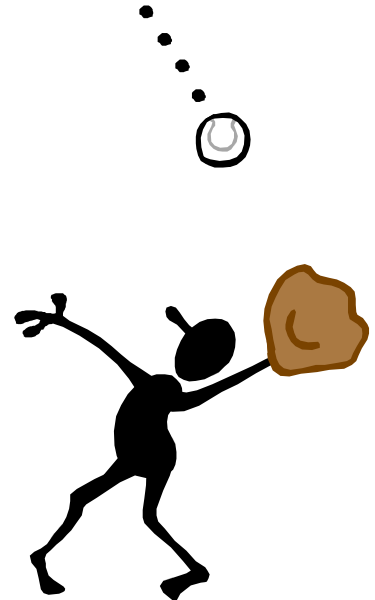
Data Analyst 2

Ranger Rick



Data Analyst 3

Outtie Owen



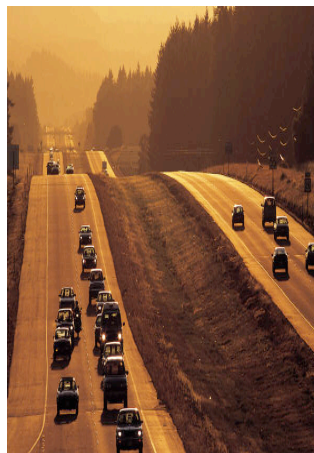
Data Analyst 4

Gapster Gary



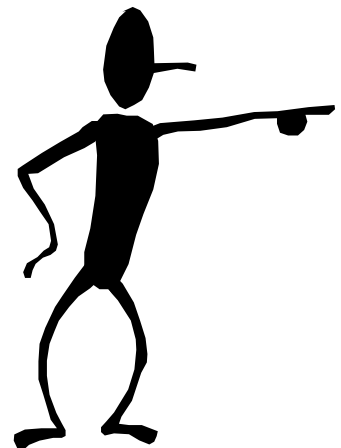
Data Analyst 5

Median Maddie



Data Analyst 6

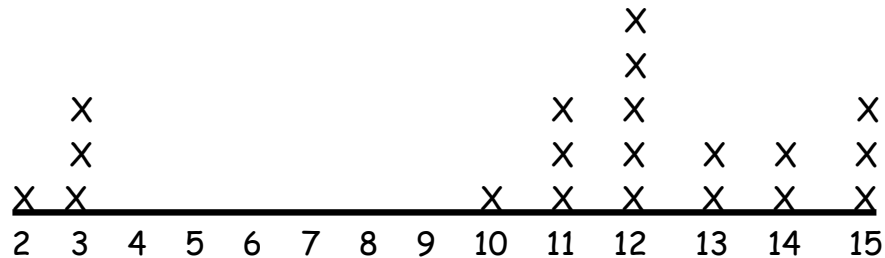
Mean Artie  
Dean



### Sugar Content of Popular Kids' Cereals

Cereal	Sugar(g)	Cereal	Sugar (g)
Apple Jacks®	15	Frosted Mini Wheats®	11
Cap'n Crunch®	12	Frosted Wheaties®	12
Cheerios®	2	Golden Grahams®	11
Chex®	3	Honey Nut Cheerios®	11
Cinnamon Toast Crunch®	10	Kix®	3
Cocoa Krispies®	11	Lucky Charms®	13
Cocoa Puffs®	14	Reeses Puffs®	12
Corn Pops®	15	Rice Krispies®	3
Froot Loops®	12	Smacks®	15
Frosted Flakes®	12	Trix®	13

Amount of Sugar (grams) in Cereal



- Using the line plot, determine the number of cereals sugar content that have less than 10 grams of sugar.
- Explain why your answer is correct using your understanding of data analysis and graphing. Use words, numbers, and/or symbols in your response.

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Name \_\_\_\_\_

Date \_\_\_\_\_

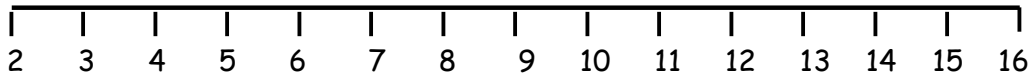
# **Line Plots** Day 1 Exit Card

Create a line plot using the cereal calcium content data.

**Calcium Content**

Corn Pops ©	Frosted Flakes ©	Rice Krispies ©	Coco Krispies ©	Special K©	Cap'n Crunch ©	Mini Wheats ©	Smacks ©	Froot Loops ©	Apple Jacks ©
5	2	3	5	9	4	16	6	4	8

\_\_\_\_\_ (Title)



Range \_\_\_\_\_ Mode \_\_\_\_\_ Outliers \_\_\_\_\_ Gaps \_\_\_\_\_

Choose your **favorite** cereal from the list above. \_\_\_\_\_

Based on the line plot, explain whether your cereal would be considered healthy. Use your understanding of data analysis and graphing to explain why your answer is correct. Use words, numbers, and/or symbols in your response.

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# Think Twice!

(page 1)

Tony's mother has said that he is allowed to choose one candy bar at the supermarket checkout. Tony knows his mother wants him to try to eat healthier. He wants to know how much fat is in his favorite candy bars so that he can make a better decision about which candy bar to buy. On page 2 of this activity, create a line plot using the data and pictures below so that Tony can easily determine which candy would be the healthiest choice.

Fat Content of Popular Candies			
(grams per serving)			
Hershey's Bar©	13	Snickers©	11
Take 5©	10	Milky Way©	10
3 Musketeers©	8	A-M-zing Bars©	12
Reese's Pieces©	11	Twix©	14
Butterfinger©	11	Crunch©	12
Reese's Peanut Butter Cups©	14	Kit Kat©	11

candy	candy	candy	candy
candy	candy	candy	candy
candy	candy	candy	candy

Sources: Hershey's Chocolate, A-M-zing, Reese's Peanut Butter Cups, Reese's Pieces, Kit Kat and Take 5 are trademarks of Hershey Inc. Crunch, Butterfinger, and Twix are trademarks of Nestle Inc. 3 Musketeers, Snickers, and Milky Way are trademarks of M&M Mars Inc.

## Think Twice!

(page 2)



Now that you have arranged the data for Tony, explain which candy bar Tony should choose if he wants to pick the healthiest candy bar based on fat content. Remember to use your understanding of data analysis and reading a data table to explain why he should choose that bar. Use words, numbers and/or symbols in your explanation.

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## Attention Consumers!

Think back to our earlier discussion about how manufacturers decide on which products to sell and how to market those products. You have had the opportunity to look at the fat content of several popular snack items. Since your goal is to help consumers like you make healthier snack choices, research and select a healthy snack to market to the public. Then complete one activity from the list below using your chosen snack. Remember to review the rubrics for each activity prior to beginning and submitting your chosen project.

Student Name: \_\_\_\_\_

Name of Healthy Snack: \_\_\_\_\_

Fat Content of Healthy Snack: \_\_\_\_\_ per serving

Activity Choice (circle one): 1      2      3



### Activity 1: Live On the Air

Create a 30 second radio ad for your chosen snack. Remember to include valuable information about the product and its manufacturer. You have only 30 seconds to make the listening audience want to purchase your chosen product so choose your words carefully!



### Activity 2: Read All About It

Create a 5 x 7 inch color advertisement for the local newspaper. Remember to include words and pictures in your design. What would make consumers want to purchase your healthy snack selection?

**Activity 3: To Whom It May Concern**

Write a letter to the school cafeteria manager persuading him or her to showcase your snack choice in the school snack bar. Remember to include at least three reasons why your snack is a healthier and better choice than the other snacks offered. Submit your work in friendly letter format.

**Activity Rubrics:**

<i><b>Live on the Air</b></i>	
<b>3</b>	<ul style="list-style-type: none"><li>• Ad is 30 seconds in length.</li><li>• Ad includes the snack's name and manufacturer.</li><li>• Ad includes a minimum of three facts/details about the product.</li><li>• Ad is original and persuasive.</li></ul>
<b>2</b>	<ul style="list-style-type: none"><li>• Ad is 25-29 seconds in length.</li><li>• Ad includes either the snack's name or manufacturer.</li><li>• Ad includes 1-2 facts/details about the product.</li><li>• Ad is somewhat original and persuasive.</li></ul>
<b>1</b>	<ul style="list-style-type: none"><li>• Ad is less than 25 seconds in length.</li><li>• Ad includes an inaccurate snack name or manufacturer.</li><li>• Ad includes inaccurate facts/details about the product.</li><li>• Ad is unoriginal or unpersuasive.</li></ul>

<i><b>Read All About It</b></i>	
<b>3</b>	<ul style="list-style-type: none"><li>• Ad is 5" x 7" and in color.</li><li>• Ad includes the snack's name and manufacturer.</li><li>• Ad includes a minimum of three facts/details about the product.</li><li>• Ad is original and persuasive.</li></ul>
<b>2</b>	<ul style="list-style-type: none"><li>• Ad is larger or smaller than 5" x 7" and is in color.</li><li>• Ad includes either the snack's name or manufacturer.</li><li>• Ad includes 1-2 facts/details about the product.</li><li>• Ad is somewhat original and persuasive.</li></ul>
<b>1</b>	<ul style="list-style-type: none"><li>• Ad is larger or smaller than 5" x 7" and is not in color.</li><li>• Ad includes an inaccurate snack name or manufacturer.</li><li>• Ad includes inaccurate facts/details about the product.</li><li>• Ad is unoriginal or unpersuasive.</li></ul>

<i>To Whom It May Concern</i>	
3	<ul style="list-style-type: none"> <li>• Letter includes all the parts of a friendly letter.</li> <li>• Letter includes the snack's name and manufacturer.</li> <li>• Letter includes three factual reasons for purchasing the product.</li> <li>• Letter is original and persuasive.</li> </ul>
2	<ul style="list-style-type: none"> <li>• Letter includes most of the parts of a friendly letter.</li> <li>• Letter includes the snack's name or manufacturer.</li> <li>• Letter includes 1-2 factual reasons for purchasing the product.</li> <li>• Letter is somewhat original and persuasive.</li> </ul>
1	<ul style="list-style-type: none"> <li>• Letter includes some of the parts of a friendly letter.</li> <li>• Letter includes an inaccurate snack name or manufacturer.</li> <li>• Letter includes three or fewer inaccurate reasons for purchasing the product.</li> <li>• Letter is unoriginal and unpersuasive.</li> </ul>

REMINDER!!!!

✓ Check ALL your  
work carefully! 😊

# Data Analysis Vocabulary

## Now Hiring!

Nifty Snacks Inc. has heard about your research of healthy snacks and is interested in creating a new snack to market to children. In order to determine how many bags of Nifty Nibbles they can produce each day, the manager of Nifty Snacks Inc. needs to know the typical amount of time a worker takes to finish one bag of nibbles. Those workers who can produce a bag of Nibbles in the least amount of time will be hired.

Using the materials and recipe below, complete the experiment. Remember to read the recipe and directions carefully before beginning the experiment. Incorrect samples must be thrown away and the worker fired!

Materials: stopwatch, recipe items, seal-able plastic sandwich bags

**Nifty Nibbles Recipe** – in a sandwich bag combine 10 of each of the following ingredients: raisins, pretzels, dried cranberries, crackers, and cereal squares. Seal the bag and shake lightly to mix all the ingredients.

Directions:

1. With a partner, take turns each creating 3 bags of Nifty Nibbles (see recipe above). While you are working, your partner should be tracking the amount of time it takes you to complete each bag by using the stopwatch. Record your individual trial times in the frequency table below.

**Time Needed to Make Nifty Nibbles (individual)**

Trials	Tally	Frequency (s)
1		
2		
3		

2. Record your best time on a sticky note and place it on the line plot on the chalkboard.

3. Using the data on the board, determine the range and mode.

Range: \_\_\_\_\_ Mode: \_\_\_\_\_

4. Using the data on the board, determine if there are any gaps or outliers in the data.

Gaps: \_\_\_\_\_ Outliers: \_\_\_\_\_

5. Record any other observations you have made about the data.

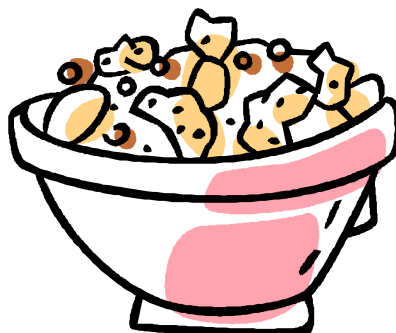
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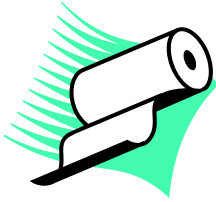
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## We're On a Roll

Nifty Snacks Inc. was very impressed with your assembly skills but since they need to make large quantities of Nifty Nibbles, they will be utilizing an assembly line method. In order to determine how many bags of Nifty Nibbles they can produce each day, the manager of Nifty Snacks Inc. needs to know the typical amount of time it takes to finish one bag of nibbles on the assembly line. The assembly line workers who can produce a bag of Nibbles in the least amount of time will be hired.

Using the materials and recipe below, creating an assembly line where each group member has a role. Remember to read the recipe and directions carefully before beginning the experiment. Incorrect samples must be thrown away and the assembly team fired!

Materials: stopwatch, recipe items, seal-able plastic sandwich bags

**Nifty Nibbles Recipe – in a sandwich bag combine 10 of each of the following ingredients: raisins, pretzels, dried cranberries, crackers, and cereal squares. Seal the bag and shake lightly to mix all the ingredients.**

### Part A -

In teams, assign each member a role on the assembly line. Possible positions may be timer, bag sealer, raisin counter, etc. Each team member may perform only one task and cannot begin their task until the first person in the assembly line begins the production. Continue the assembly line until the group has completed 4 bags of Nifty Nibbles (see recipe above). After completing each individual bag, the timekeeper should record the amount of time it took to complete each bag in the frequency table.

**Time Needed to Make Nifty Nibbles (assembly line)**

Trials	Tally	Frequency (s)
1		
2		
3		
4		

**Part B -**

Record your team's times on sticky notes and place them on the line plot on the chalkboard. Then use the data collected from all teams to answer the questions below.

6. Using the data on the board, determine the:

Range: \_\_\_\_\_ Median: \_\_\_\_\_ Mode: \_\_\_\_\_

7. Using the data on the board, determine if there are any gaps or outliers in the data.

Gaps: \_\_\_\_\_ Outliers: \_\_\_\_\_

8. Record any other observations you have made about the data.

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Part C -

Write a letter to Mr. Nifty explaining why your team should or should not be hired to make Nifty Nibbles for Nifty Snack Inc. Use the information from your line plot to justify your thinking. Be sure to use words and numbers in your letter.

Dear Mr. Nifty,

Sincerely,



## Around the Bend



Mr. Indy has assembled 11 racecars. He needs to determine the typical number of laps a racecar can make using A+ Batteries. Mr. Indy placed each of his 11 racecars on the track and started them at the same time. He then recorded the number of laps each car completed. His data is below.

Car Number	Number of Laps
1	12
2	14
3	17
4	15
5	19
6	16
7	14
8	13
9	17
10	20
11	17

Step A - Using Mr. Indy's data, construct a line plot.

Step B -

1. Using your line plot, determine the typical number of laps Mr. Indy's racecars completed. Remember, we call this number the median. \_\_\_\_\_
2. On the lines below, explain how you got your answer. Use words and numbers in your response.

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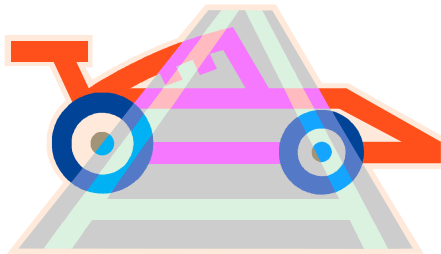
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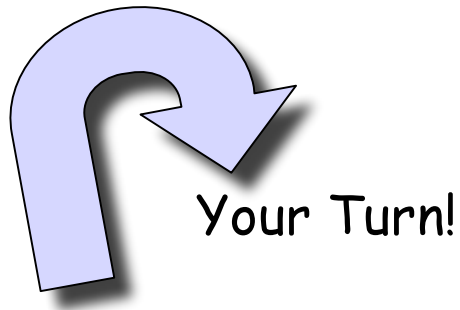
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Now that you have become a data analyst expert, it is your turn to survey your peers! Follow the directions below and check off each step as you complete it.

- \_\_\_1. Choose a survey topic that interests you. The data you collect must be numerical because you will create a line plot.
- \_\_\_2. Have teacher approve topic
- \_\_\_3. Collect data (at least 20 pieces of data).
- \_\_\_4. Create a line plot.
- \_\_\_5. Analyze the data using the following guide.
  - ✓ Find range, mode, median, and mean.
  - ✓ Determine if there are any gaps or outliers.
  - ✓ Does the data represent what you predicted?
  - ✓ Based on the data you collected, is the median or mean a better reflection of the typical number? Explain.

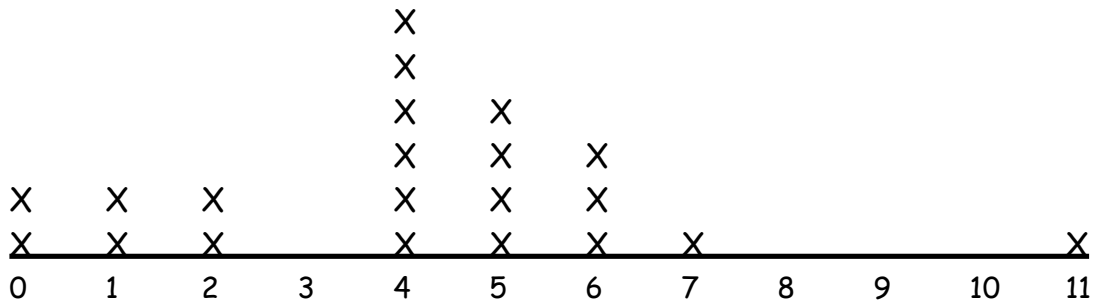
Name\_\_\_\_\_

Date\_\_\_\_\_

## Summative Assessment- Line Plots

## Part I

Pam is at the Annual Health Carnival. The health craze table is surveying fourth graders to determine how many times a week they exercise for at least 20 minutes. The data is represented below.



- What is the range?  
☐ a. 10  
☐ b. 11  
☐ c. 4  
☐ d. 12
- What is the median?  
☐ a. 4  
☐ b. 5  
☐ c. 11  
☐ d. 3
- What is the mode?  
☐ a. 3  
☐ b. 4  
☐ c. 11  
☐ d. 5
- Which statement is not supported by the line plot?  
☐ a. There is an outlier at 11.  
☐ b. Most of the students surveyed exercise between 4 to 6 times per week.  
☐ c. The health craze table surveyed 21 students  
☐ d. Only 1 student exercises more than 6 times per week.

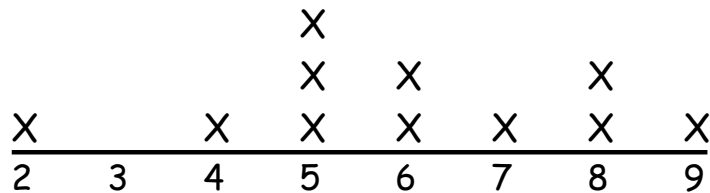
## Part II

## Brief Constructed Response

Ms. Ray, a fourth grade teacher, took a survey of the number of letters in students' names the first day of school. The data is below.

**Step A**

Look at the line plot below. Use it to answer the following question.



What is the median? \_\_\_\_\_

**Step B**

Use what you know about data analysis and graphing to explain why your answer is correct. Mary and Rob, two new students entered Ms. Ray's class the next week, explain how adding new students to the class changes the median. Use number and/or words in your explanation.

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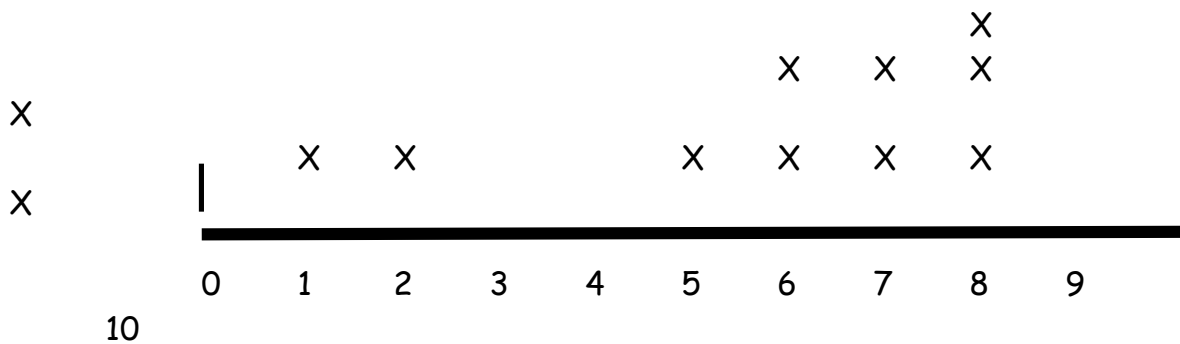
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[illegible]

## Snack Data

Snack	Fat Content per serving (g)
Rold Gold Pretzels©	1
Mini Chips Ahoy©	8
Cheese Nips©	7
Ritz Bitz Sandwiches©	8
Honey Teddy Grahams©	5
Mini Oreos©	7
Animal Crackers©	6
Nacho Cheese Doritos©	8
Fritos©	10
Lays Potato Chips©	10
Cheddar Goldfish©	6
Lindens Chocolate Chip Cookies©	2

Fat Content (grams) of Fourth Grade Snack Choices



Range: 9

Mode: 8

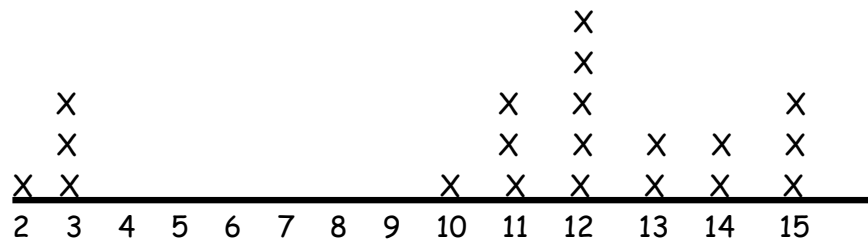
Gaps: between 2 and 5

Outliers: none

### Cereal Data

Cereal	Sugar Content per serving (g)
Apple Jacks®	15
Cap'n Crunch®	12
Cheerios®	2
Chex®	3
Cinnamon Toast Crunch®	10
Cocoa Krispies®	11
Cocoa Puffs®	14
Corn Pops®	15
Froot Loops®	12
Frosted Flakes®	12
Frosted Mini Wheats®	11
Frosted Wheaties®	12
Golden Grahams®	11
Honey Nut Cheerios®	11
Kix®	3
Lucky Charms®	13
Reeses Puffs®	12
Rice Krispies®	3
Smacks®	15
Trix®	13

Amount of Sugar (grams) in Cereal

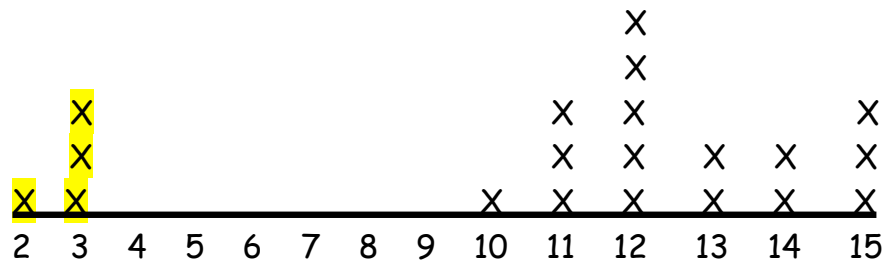


Range: 13    Mode: 12    Gaps: between 3 and 10    Outliers: None

## Sugar Content of Popular Kids' Cereals

Cereal	Sugar(g)	Cereal	Sugar (g)
Apple Jacks®	15	Frosted Mini Wheats®	11
Cap'n Crunch®	12	Frosted Wheaties®	12
Cheerios®	2	Golden Grahams®	11
Chex®	3	Honey Nut Cheerios®	11
Cinnamon Toast Crunch®	10	Kix®	3
Cocoa Krispies®	11	Lucky Charms®	13
Cocoa Puffs®	14	Reeses Puffs®	12
Corn Pops®	15	Rice Krispies®	3
Froot Loops®	12	Smacks®	15
Frosted Flakes®	12	Trix®	13

Amount of Sugar(grams) in Cereal



- Using the line plot and data table, highlight or circle the 4 healthiest cereals based on fat content.
- Explain why your answer is correct using your understanding of data analysis and graphing. Use words, numbers, and/or symbols in your response.

Student answers should demonstrate that the student completely understood the problem and how to solve it using data analysis.

The student should:

- ✓ Use mathematical vocabulary, such as range, median, and/or mode
- ✓ Use numbers, words, symbols and/or pictures to support their answer using the line plot.
- ✓ Relate their answer to the line plot

Name \_\_\_\_\_

Date \_\_\_\_\_

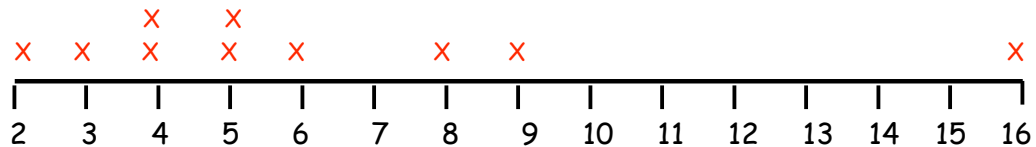
### Line Plots Day 1 Exit Card

Create a line plot using the cereal calcium content data. (Calcium Data obtained from USDA)

#### Calcium Content

Corn Pops®	Frosted Flakes®	Rice Krispies®	Coco Krispies®	Special K®	Cap'n Crunch®	Mini Wheats®	Smacks®	Froot Loops®	Apple Jacks®
5	2	3	5	9	4	16	6	4	8

\_\_\_\_\_ (Title)



Range 14    Mode 4,5    Outliers 16    Gaps between 6 and 8,  
between 9 and 16

Choose your favorite cereal from the list above. **Answers will vary.**

Based on the line plot, explain whether your cereal would be considered healthy. Use your understanding of data analysis and graphing to explain why your answer is correct. Use words, numbers, and/or symbols in your response.

2 points - Students should provide a reasonable response that demonstrates the student completely understands the problem and how to solve it using data analysis. The student should:

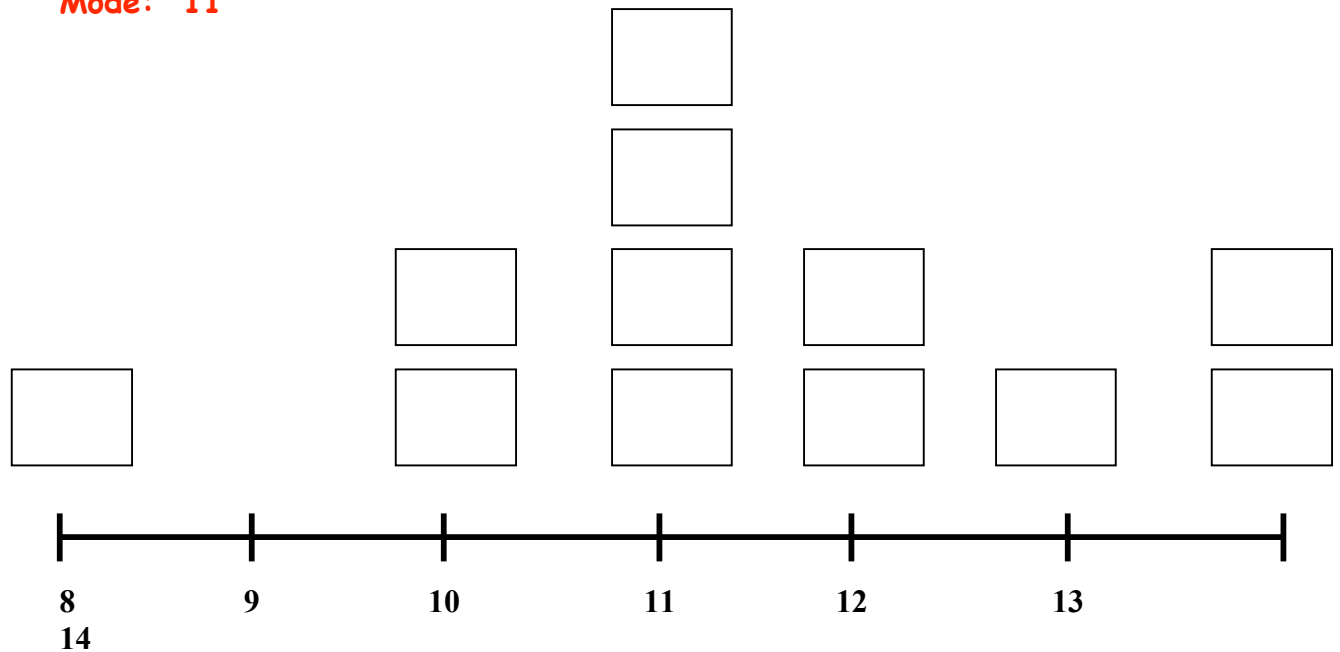
- ✓ Use mathematical vocabulary, such as range, median, and/or mode
- ✓ Use numbers, words, symbols and/or pictures to support their answer using the line plot.

1 point - one or more requirements are missing

## Think Twice!

Range: 6

Mode: 11



Now that you have arranged the data for Tony, explain which candy bar Tony should choose if he wants to pick the healthiest candy bar based on fat content. Remember to use your understanding of data analysis to explain why he should choose that bar. Use words, numbers and/or symbols in your explanation.

*Answer: Tony should choose a 3 Musketeers® bar.*

*Explanation: Should demonstrate that the student completely understood the problem and how to solve it using data analysis strategies:*

- Used the correct mathematical strategies to determine the candy bar with the lowest fat content.*
- Used math vocabulary (ex: range, least, line plot, comparing) to explain what was done to solve the problem.*
- The explanation was complete, well-organized and logical.*
- Used numbers, words and/or symbols to show how the problem was solved.*

## Attention Consumers! Activity Rubrics

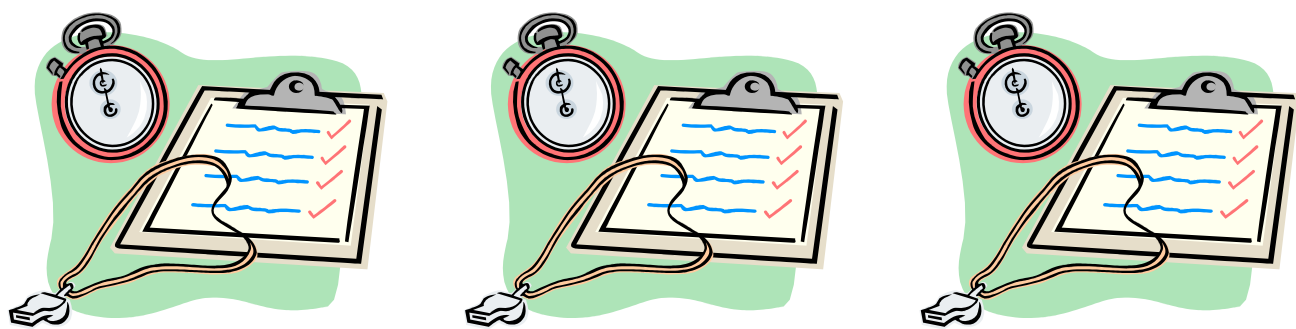
<b><i>Live on the Air</i></b>	
<b>3</b>	<ul style="list-style-type: none"> <li>• Ad is 30 seconds in length.</li> <li>• Ad includes the snack's name and manufacturer.</li> <li>• Ad includes a minimum of three facts/details about the product.</li> <li>• Ad is original and persuasive.</li> </ul>
<b>2</b>	<ul style="list-style-type: none"> <li>• Ad is 25-29 seconds in length.</li> <li>• Ad includes either the snack's name or manufacturer.</li> <li>• Ad includes 1-2 facts/details about the product.</li> <li>• Ad is somewhat original and persuasive.</li> </ul>
<b>1</b>	<ul style="list-style-type: none"> <li>• Ad is less than 25 seconds in length.</li> <li>• Ad includes an inaccurate snack name or manufacturer.</li> <li>• Ad includes inaccurate facts/details about the product.</li> <li>• Ad is unoriginal or unpersuasive.</li> </ul>

<b><i>Read All About It</i></b>	
<b>3</b>	<ul style="list-style-type: none"> <li>• Ad is 5" x 7" and in color.</li> <li>• Ad includes the snack's name and manufacturer.</li> <li>• Ad includes a minimum of three facts/details about the product.</li> <li>• Ad is original and persuasive.</li> </ul>
<b>2</b>	<ul style="list-style-type: none"> <li>• Ad is larger or smaller than 5" x 7" and is in color.</li> <li>• Ad includes either the snack's name or manufacturer.</li> <li>• Ad includes 1-2 facts/details about the product.</li> <li>• Ad is somewhat original and persuasive.</li> </ul>
<b>1</b>	<ul style="list-style-type: none"> <li>• Ad is larger or smaller than 5" x 7" and is not in color.</li> <li>• Ad includes an inaccurate snack name or manufacturer.</li> <li>• Ad includes inaccurate facts/details about the product.</li> <li>• Ad is unoriginal or unpersuasive.</li> </ul>

<b><i>To Whom It May Concern</i></b>	
<b>3</b>	<ul style="list-style-type: none"> <li>• Letter includes all the parts of a friendly letter.</li> <li>• Letter includes the snack's name and manufacturer.</li> <li>• Letter includes three factual reasons for purchasing the product.</li> <li>• Letter is original and persuasive.</li> </ul>
<b>2</b>	<ul style="list-style-type: none"> <li>• Letter includes most of the parts of a friendly letter.</li> <li>• Letter includes the snack's name or manufacturer.</li> <li>• Letter includes 1-2 factual reasons for purchasing the product.</li> <li>• Letter is somewhat original and persuasive.</li> </ul>
<b>1</b>	<ul style="list-style-type: none"> <li>• Letter includes some of the parts of a friendly letter.</li> <li>• Letter includes an inaccurate snack name or manufacturer.</li> <li>• Letter includes three or fewer inaccurate reasons for purchasing the product.</li> <li>• Letter is unoriginal and unpersuasive.</li> </ul>

# Nifty Nibbles Team Data

Team Name	Trial Times (seconds)			



## We're On a Roll

Part A - *Answers will vary*

Part B - *Answers will vary*

Part C - *Answers will vary, however, the letter should demonstrate that the student completely understood the question and how to answer it using data analysis strategies:*

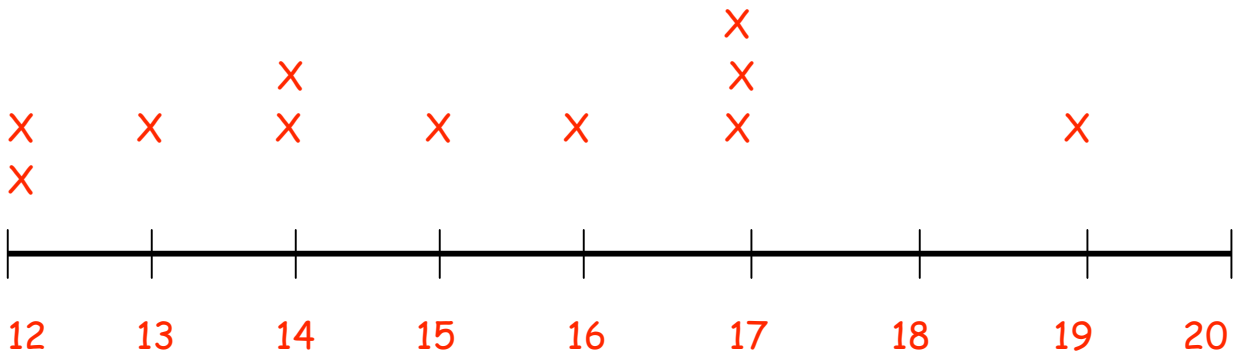
- *Used the correct mathematical strategies to determine whether or not his/her team should be hired.*
- *Used math vocabulary (ex: range, least, line plot, comparing) to explain his/her answer.*
- *The explanation was complete, well-organized and logical.*
- *Used numbers, words and/or symbols in his/her explanation.*

## Around the Bend

Car Number	Number of Laps
1	12
2	14
3	17
4	15
5	19
6	16
7	14
8	13
9	17
10	20
11	17

Step A - Using Mr. Indy's data, construct a line plot.

*Indy's Racecars*



Step B -

1. Median - 16
2. Student uses words and number to explain how determined median.



## Data Analysis Vocabulary

Axis - a reference line

Data - information, usually numerical

Graph - a pictorial device used to show a numerical relationship

Line Plot - a diagram showing frequency of data on a number line

Mean - the sum of a set of numbers divided by the number of elements in the set

Median - the middle number of a set of numbers when the numbers are arranged from least to greatest, or the mean of two middle numbers when the set has two middle numbers

Mode - the number that appears most frequently in a set of numbers (there may be one, more than one, or no mode)

Number Line - a diagram that represents numbers as points on a line

Outlier - a number in a set of data that is much larger or smaller than most of the other numbers in the set

Range - the difference between the greatest number and the least number in a set of numbers

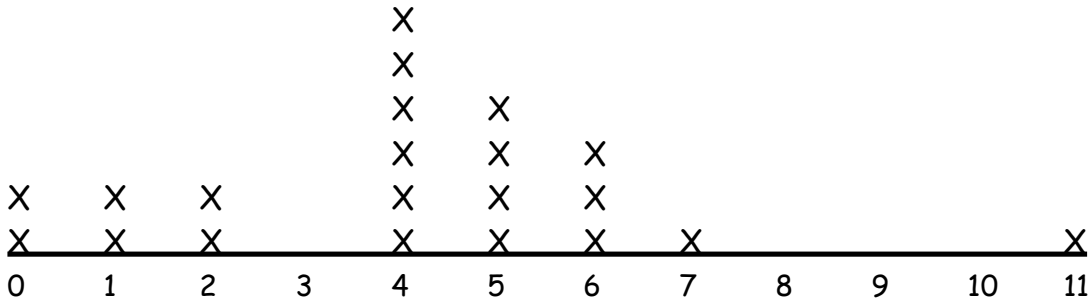
Name \_\_\_\_\_

Date \_\_\_\_\_

Summative Assessment  
Line Plots

Part I

Pam is at the Annual Health Carnival. The health craze table is surveying fourth graders to determine how many times a week they exercise for at least 20 minutes. The data is represented below.



1. What is the range?

- ☐ a. 10
- ☒ b. 11
- ☐ c. 4
- ☐ d. 12

2. What is the median?

- ☒ a. 4
- ☐ b. 5
- ☐ c. 11
- ☐ d. 3

3. What is the mode?

- ☐ a. 3
- ☒ b. 4
- ☐ c. 11
- ☐ d. 5

4. Which statement is not supported by the line plot?

- ☐ a. There is an outlier at 11.
- ☐ b. Most of the students surveyed exercise between 4 to 6 times per week.
- ☐ c. The health craze table surveyed 21 students
- ☒ d. Only 1 student exercises more than 6 times per week.

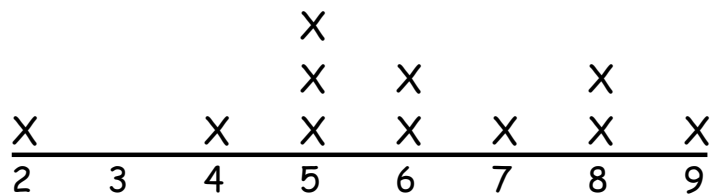
## Part II

## Brief Constructed Response

Ms. Ray, a fourth grade teacher, took a survey of the number of letters in students' names the first day of school. The data is below.

**Step A**

Look at the line plot below. Use it to answer the following question.



What is the median? **6**

**Step B**

Use what you know about data analysis and graphing to explain why your answer is correct. Mary and Rob, two new students entered Ms. Ray's class the next week, explain how adding new students to the class changes the median. Use number words, and/or symbols in your explanation.

Students should include:

- ✓ How they determined the median
- ✓ Use mathematical vocabulary (line plot, median)
- ✓ Explain how the median changes from 6 to 5 when the new students enter the class
- ✓ Use numbers, words and/or symbols to show how the problem was solved